

# Sample Design Document

## Add a Title: Team Name BattleBots LW or HW Design Document

### Research:

In the first section, students will answer a research question related to their project. They will be scored on how well they research the topic, provide specific examples and cite their sources. (3 or more reliable sources). Students should also describe how their research relates to their own project. Each of the events will have its own research topic for students to investigate.

### Research Topics:

**Battle Bots:** *Robotics in the Military*

**RobotC:** *No Research Topic – Write Pseudocode*

**Robo Rally:** *Robotic Space Exploration*

**Line Follower:** :

*Robotics in Emergency Services*

### Specifications:

#### **Robot Dimensions:**

Length: 10"

Width: 9"

Height: 10"

#### **Pictures of Robot:**



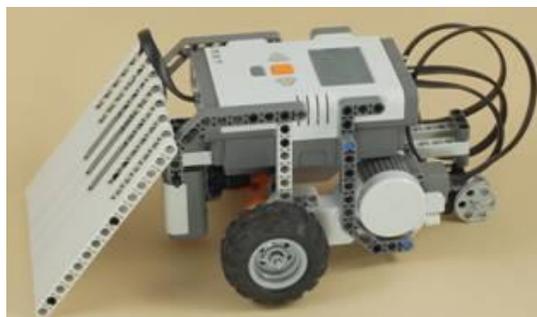
#### **Main Components:**

2 motors (B and C) to drive

1 motor (A) to turn ultrasonic sensor

1 ultrasonic sensor

1 light sensor

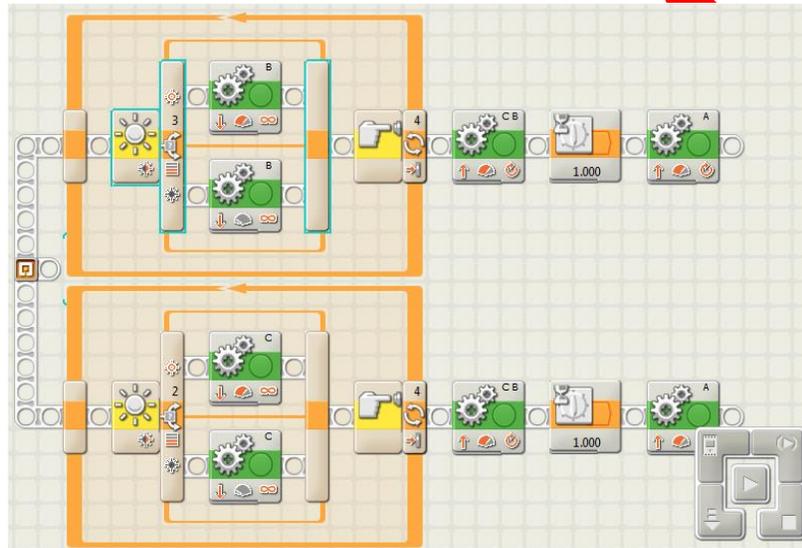


- 2 medium tires with rough tread
- 1 small grey wheel on back

### Programming:

Our program uses two light sensors to “look” for the line. If they see white (brighter than 50%) they tell their motor (A or B) to drive forward at 90% power. When the light sensors sees black (darker than 50%), they tell their motor to stop which makes the robot pivot and turn to stay on the line.

Both motors run on a loop until the touch sensor is pushed when the robot bumps into the brick. At that point, the robot backs up 2 rotations at 90% power to position itself to fire the missile. We added a wait block for 1 second to make sure the robot is in position, and then motor A does 0.5 rotations to fire the missile at the target.



### Testing:

Students will explain the testing of their robot and what modifications they made to improve its speed, accuracy, or attack (BattleBots). This should include physical changes to the robot such as changing the wheels, modifications to the missile/attack arm or even redesigning the robot. It should also include specific changes to the programming. Students should include a data table showing the results of different trials.

Trial	Time	Adjustments
1	17.2 s	First successful completion of the course.
2	15.7 s	Increased the distance between the sensors to 14cm.
3	14.2 s	Decreased the distance between the sensors to 12cm.
4	12.4 s	Increased the power on the motors to 80%
5	10.2 s	Increased the power on the motors to 90%